

Category #33:

The Guidelines should address the use of cold water versus hot water cleaning.

State Response:

School districts that currently use hot or warm water to clean with, experiment with green cleaning products that work with cold water. This will allow the cleaning professionals in each school district to weigh the pros and cons of using hot or cold water, to determine if one method cleans better than another for some or all applications, and whether or not there are cost savings associated with the use of cold water cleaning. Hot water requires the use of a heat source, which is a waste of energy resources—since today's detergent technology no longer needs heat to activate the cleaning action. In many schools the use of hot water requires starting up large boilers that are used to heat the school in the winter and produce hot water. The use of cold water saves money and reduces energy consumption and labor—hot water washing requires a cold water rinse which is an added step. In addition, from a safety standpoint, cold water will not cause severe burns as has occurred with the use of hot water. Many facilities have reported success using cold water products.

Frequently Asked Public Comment:

Cold Water Cleaning vs. Hot Water Cleaning

--As facility director of a 3200 student, 7 building school system, I have found that with the use of cold water for cleaning we are able to maintain cleaner, fresher, more economical buildings. I admit at first I was skeptical but once I completed training and changed our way of thinking the difference was amazing. Knowing that there are two kinds of soil and that grease floats in cold water made everything I had been told about cleaning irrelevant. It is logical to me that warm water breaks grease down and as you clean the grease is spread to other areas. Cold water helps to get the grease off the floors, etc. and thus the area is cleaner and fresher. Regardless of what the so called experts say cold water is the way to go. Stand firm in the face of your critics, they are for big business, we are for what's best for kids, education, and the tax payers. If we let them have their way bleach will continue to be used in the schools and custodians will continue to believe that bleaching is the answer rather than cleaning with clean water and detergent. If this thought pattern continues we are setting ourselves up for major health problems (germs), dangerous conditions, and more pollution of the ground, air, and water. What price would big business have us put on our health and environment? It is obvious they can make the statistics say whatever they want, but at what price to society.

(James Brown, Facility Director of 3200 Students, 7 building school system in Georgia)

--We strongly agree with the use of cold water for cleaning. While hot water is apparently convenient, there is no reason that other systems that are more environmentally sensitive because they use less water, use cold water, save energy, and don't cause potential mold problems can't substitute for hot water systems. The technologies have existed in many forms for a long time and have been repeatedly proven cost-competitive and efficacious in the field.

(Deborah Lema, Research and Education, Racine Industries, Inc.)

--Just saw an article in the Cleaning and Maintenance Management magazine concerning the use of cold water detergents for carpet cleaning. The articles were against cold water vs. hot water in carpet cleaning. It urges readers to contact you with feed back, which is the purpose of this letter.

Having been in facilities maintenance for over 40 years, in both Health Care and Public Schools, I think I was possibly cleaning in a Hospital before most of the "Authorities" born. It feels good to finally be able to state that, because time in the trenches should give one some credentials concerning the subject of cleaning. I am presently the Director of B & G for a Western New York School district with 11 buildings of

a total of over a million square feet of occupied space.

Four years ago, like most of the uneducated or uninformed, I too believed that hot water was the ultimate medium for carpet cleaning solutions.

However, being a life long learner, I took the opportunity to attend a cleaning seminar in which I was exposed to a revolutionary concept in carpet cleaning, COLD WATER. "Unheard Of", "No Way", "Give Me a Break!" were the overwhelming response to such a outlandish statement. To my surprise, I saw a live demonstration and then even more surprising we were give the chemical explanation behind this new "wonderment". As I have stated many times since, once explained, it was like a cartoon light bulb being turned on. Pure physics, which we all learned in High School, applied to the real world. HEAT travels to COLD. A good cold water detergent will, in fact, carry away soil and oil in cold water. No wonder carpet spots return, or soil more quickly using hot water. Hot water only spreads the dirt, it doesn't remove it, this is a scientific fact.

For the last four years, FCSD has used nothing but cold water to pre-spot, and clean carpets, and we have had the best results in my years of experience. I do not have to argue the theory, I have the physical proof with a four year history of results.

It is quite apparent that your team has done its home work in setting the NYS cleaning standards, because you have supported the basic facts of the matter concerning cold water cleaning. I very much appreciate this and sincerely hope you and your team do not weaver in the face of Cleaning Industry pressure. Those of us who support Green Cleaning are concerned with the environment, and the heritage we leave our children, over the economic gain of the Corporate Giants, and their outdated technology concepts.

In the final analysis, by using cold water performing products, I have been able to Green our School District by using less chemicals, less energy, producing an end product that stays cleaner longer, because we are getting it cleaner with cold water than with hot water.

(John Hines, Director of Buildings and Grounds, Fairport Central School District)

--(1st Response)

I was upset when I read some articles yesterday. The ID numbers were 61089 and 61093. They were not in support of cold water cleaning. I have been cleaning with products and cold water for three years now. The building is now actually clean. I would invite these people to come and witness the building in which I have pictures of the way it was with hot water cleaning. I have found I am getting better results for less cost. Schools main cleaning times are in the summer. I wonder if these people have thought of the energy savings by not having to heat water over the summer months. I use only use 3 basic products to keep this building in shape. I hope everyone could see the full picture. All of us must look at safety, health and cost. I just wanted you to know my thoughts on this. Anyone can call me and I can go in to detail on the program I use.

(Additional Response)

I read an article in CM Cleaning and Maintenance Management by Lynn Krafft on 4/27/06. She was not in support of cold water cleaning. In this world we all have our own opinions and that makes the world we live in.

I also would like to express my opinion on this issue, as I feel qualified to do so based on the following. I started in the Geneseo New York State Armory in 1985 and started from the bottom. I have striped, waxed, cleaned bathrooms, carpets etc., you name it and I have been there. I have worked hand and hand with cleaners and maintenance since then. I feel given my experience over the years justifies me sending you this email.

I have seen dramatic improvements since I started with cold water cleaning. I just want to explain and show you what has occurred. In the year before I started this job we used hot water cleaning. The total cost was \$34,349 for cleaning chemicals and \$3,156 for 3110 CCF natural gas, which is the cost for boiler run. The total for hot water cleaning was \$37,505.

The first year of cold water cleaning the total cost of cleaning chemicals was \$29,142 and 0 CCF of

natural gas used. This is a difference of \$8,363 saved.

This year I have spent \$17,338 in cleaning chemicals; the dollar amounts saved is significant. To save a dollar is great but it is not my greatest concern. Children go to school here, including mine and I want a clean safe building for them to attend.

In addition to the above savings we were also able to complete our summer cleaning 2 weeks early, which equals 2,880 hours of labor cost savings.

I took some pictures before I started cold water cleaning and would like you to compare the results. I feel that you are able to clearly see the difference between the two methods of cleaning. I hope everyone can see what the best solution is to make our public buildings, schools and homes a cleaner more healthy environment.

(Mike Donovan, Wayland-Cohocton Central School)

--You need to check your "facts" about hot water. Before implementing this guideline, I believe a proper discussion needs to take place with industry leaders and training organizations. I would suggest contacting the Institute of Inspection, Cleaning and Restoration Certification (IICRC) and ask to speak to the Technical Advisor, Jeff Bishop. I am sure the science of hot water can be explained to your satisfaction. (Dane Gregory)

--It is my opinion that you should reconsider the approach to only using cold water for the extraction of carpet as spelled out by section 3.F. Although I understand the need for this document to follow green guidelines as spelled out by executive order 134, it has been our experience that warm or hot water generally performs better than cold. While it is true that many chemical manufacturers are currently creating chemistry that performs well in colder water, most often carpet is extracted using water only. The application of a pre spray is recommended (this can be performed as a cold solution) followed by a warm or hot water extraction. Because the extraction is often done using water only, the efficacy is improved using warmer water. Perhaps the paragraph could be amended to suggest that if the cleaning solution contains chemistry, cold water should be used. (Ted Hershey, Product Manager, Nilfisk-Advance, Inc.)

--For carpet cleaning, you should allow 'hot water extraction'. It is OK to ensure that the cleaning chemicals be mixed with cold water. Allow or rely on extractors that have a built in heater. (Mike Sawchuk, Vice President and General Manager, Enviro-Solutions)

--After review of the final wording for the "Proposed Guidelines and Specifications for the Procurement and Use of Environmentally Sensitive Cleaning and Maintenance Products for All Public and Nonpublic Elementary and Secondary Schools in New York State." I must admit there was an air of apprehension about as the document opened.

I thought there would be the usual rhetoric and confusing statements, that are typically found in most state documents. It was intriguing to say the least to find the statements legible and understandable.

I agree with all of the guidelines etc. that are laid out and put forth for the state.

In my tenure as Head Custodian here, the goal has been to use less toxic chemicals even to the extent of causing more labor and time to get the job done.

It was gratifying to say the least to have it spelled out that cold water should be used for floor and carpet cleaning. This practice also had been implemented several years back.

It has been a rather hard decision to have to try new chemicals and make selections as to what will work. However the storm has been weathered and the District is moving forward. And much to everyone's surprise some of the chemicals work as well as the old ones that have been put aside.

I would like to take this time to applaud you commend you on a job well done.

(Tim Bowley, Head Custodian, Randolph Central High School, Randolph, NY)

--Excerpt from Guidelines: b. Deep Cleaning - Use products with pressure-injecting and extraction machine for use on severely or deeply soiled carpets. Rotary machine brush shampooing may be performed after

pre-treating and before injection/extraction. (Use of cold water for the injection/extraction process is recommended for the same reasons as with floor care – cold water pulls the soil away from the carpet fibers.) Comments: (1) Cold water doesn't pull soil away from carpet fiber. HOT water makes soils move away from a carpet fiber through molecular expansion, the same principle that makes a tight jar lid easier to remove after running HOT water over it. (Try it with cold water). HOT water also helps to remove grease and oils while reducing the need to use dry-cleaning solvents, and reduces the amount of ANY cleaning reagent, a far "greener" proposition than saving a fraction of a percent on the cost of heating water. (2) Before publishing guidelines based on misinformation, it might be worthwhile getting input from people that actually know something about the subject. I'd recommend starting with Dr. Steven Spivak; University of Maryland Textile Science Department, ANSI/ISO guideline writer and consultant, and member of the ASCR – an organization representing carpet and rug cleaning experts. www.ascr.org (3) Also, check out the carpet cleaning guidelines published years ago and recently revised by the IICRC. www.iicrc.org They'll let you know there are several more recognized cleaning methods than "Greenseal" is aware of, but maybe "Greenseal" just isn't selling product certification to those manufacturers. (4) Try asking a few questions of the folks that make the carpet, the Carpet and Rug Institute. www.carpet-rug.com (5) As a last resort, if healthy indoor environments are your goal, spend a little time with the folks from the Mid-Atlantic Environmental Hygiene Resource Center (MEHRC) <http://www.mehrc.org/aboutmehrc.html> (Bryan O'Haleck, Seattle)

--Section E, "Use Cold Water", Best Cleaning Management Practices:

2. Hot water melts and spreads soils that are not dissolvable by water (grease, oil, fat, etc.) and those soils are likely to cling to the colder surface being cleaned, such as the carpet. If the surface is not rinsed properly before it is allowed to dry, other soil particulates in the cleaning solution will also cling to the carpet causing a "left behind soil" residue.

Response to 2.: Ironically, while most of the carpet mills in America are endorsing the use of hot water extraction on a periodic basis for cleaning of their products, the Proposed Guidelines makes a blanket condemnation of the process. In doing so, it ignores the focus and goals mentioned in the Overview quoted above.

Let's review this matter point by point.

First, hot water does indeed "melt" soils that are not dissolvable by water (grease, oil, fat, etc.). It also accelerates the action of the chemicals used so that the cleaning goes faster, with better results as far as residue removal. This leads to increased time between cleanings, meaning less exposure to the chemicals and water vapor involved in the process.

Please check the April issue of Cleaning & Maintenance Management magazine online at www.cmmonline.com/article.asp?IndexID=6636067. The article, "Green Carpet Care", written by an experienced carpet technician, outlines 4 basics for good, environmentally safe carpet cleaning. They are:

1. Select chemicals that have won the Seal of Approval from CRI or have been certified by either the Environmental ChoiceM Program or Green Seal®.
2. Use hot water extraction as part of their overall carpet cleaning strategy.
3. Avoid over-wetting carpets.
4. Use high heat. Heating the cleaning solution to more than 200 degrees Fahrenheit allows for more efficient cleaning.

Reading this article in its entirety will prove enlightening.

Second, the guideline makes two assertions that are untrue. One, that hot water "spreads soils", and two, that "those soils are likely to cling to the colder surface being cleaned, such as the carpet". Neither can possibly happen when hot water extraction is properly utilized. To begin with, hot water is injected into the carpet under pressure, forcing the detergent loosened soils out of the fibers and into the water stream which is immediately vacuumed back into the wand, through the hose, and drawn into the holding tank. Nothing is spread around. The soils are flushed from the carpet in a continuous action.

However, even if the initial shampooing or pre-spraying did move soils around after loosening them, the flushing action would still be powerful enough to pull most of the soils from the carpet nap. 100%

residue removal is next to impossible due to the three-dimensional nature of carpet, but careful rinse extraction will reduce detergent and soil residues to minor proportions.

When the hot water is sprayed into the carpet fiber, not only is the loosened soil heated to a high temperature, but so is the carpet fiber itself. There is no colder surface to which "soils are likely to cling"!

Every fiber in the carpet that the water jet reaches is brought to the same temperature, accelerating the detergent's action, loosening the soils, rinsing the fibers.

Hot water rinse extraction is the foremost method of reducing soil and detergent residues and the guidelines should mandate it, not ignore it.

Using only cold water will increase the cleaning time, add to the over-wetting danger by increased water usage, and decrease the effectiveness of the operation.

Next, let's consider another related point.

4. Hot water requires the use of a heat source, which is a waste of energy resources. The use of cold water saves money and reduces labor and energy consumption.

Response to 4.: The use of cold water will NOT save money or reduce labor for the reasons stated above. While it will save the energy used to heat it, in this case that is a poor trade-off. We can rinse the dishware and eating utensils in the cafeteria in cold water to save money, but the health department would not be pleased by the decision. In the case of the carpet cleaning, saving money by using cold water is not the optimum choice either, because it negates the very concept of "virtually leaving no soil or chemical residue" so as to "protect children and employee health."

(Mr. Lynn E. Krafft: Has been in the building services contracting field in Watertown, NY for over 30 years. He is IICRC certified in carpet cleaning and a couple of other areas. He does editing for the Ask the Experts column featured on CMMonline as a part of the (ICAN) International Custodial Advisors Network's contribution to the cleaning industry.)

--Cold Water does NOT clean as effectively as Warm or Hot water.

Hot water enhances (speeds up) chemical reactivity in most cases which means using LESS chemicals to get the job done. I've been in the cleaning industry for nearly 30 years and I can tell you that someone is selling you a bill of goods with this cold water business. Green Seal or not, you will SPEND MORE on chemicals and labor and get POOR QUALITY RESULTS. Your HEALTH COSTS are going to increase as well, since cold water does not kill bacteria like hot does.

(Mike Brummett, BASIC Carpet Care, Kansas)

--Carpet Cleaner, Cold, Hot Water Issue, Explanation of Why Cold Should be Used? Maybe they are referring to enzyme based products to clean carpets. There you can't use hot water.

(Peter Singeisen, President, Green-Tech Building Maintenance Inc.)

--I commend the State of New York for addressing the effective cleaning of our most sensitive environments--schools. While as an environmental health official and scientist with over 35 years of professional experience, I agree with most of your recommendations, I find that in portions of the guidelines there is more emphasis on "looking green" than on effective cleaning, sanitation, exposure and risk reduction to sensitive segments of the population--children. In places, your recommendations are simply not based on good science or published studies. In the long run, they can increase risks.

For example on page 8 you indicate or encourage the use of cold water. Cold water--especially where a sanitary condition is the primary concern such as in schools--does not clean nearly as effectively as hot water. This is verified in just about any physical chemistry text. The Argonne National Labs references explain the basic science concepts in simple terms. <http://www.newton.dep.anl.gov/askasci/gen01/gen01759.htm>

<http://www.newton.dep.anl.gov/askasci/chem03/chem03151.htm>

I suggest that it is far more important to heat and use water in the pursuit of health protection than it is to reduce energy use and to increase water conservation. There are many better options to achieve these commendable "green" objectives. On page 9, Section I, while I agree with the concept of minimum residue,

the idea that a rinse to reduce residue is only an extra step that wastes water as opposed to being a possible essential step to ensure sanitation is, from a health protection perspective, very misguided.

I strongly recommend you convene a committee of medical and public health scientists to review your document at least one more time before you go final with the document. The State of New York often sets the high standard for environmental health protection. Even limited shortcomings in the document could cause significant problems nationally.

(Michael A. Berry, PhD, Chapel Hill, North Carolina)

--Item III, sub-item E. Use of cold water. Some clarification is needed in regards to carpet extraction products approved under GS-37. Carpet cleaners approved under GS-37 are approved for use with warm water, which is based on consensus input from its stakeholders. If we cannot use warm water as instructed in GS-37, we would need a special product for the State of New York, which defeats the GS-37 certification process. In addition, this product would require an updated label and use instruction, which would cause time delays and product availability issues.

(Chuck Hodge, Scientist, Ecolab Inc., Eagan, Minnesota)

--I believe the document needs more fine tuning especially with some of the equipment requirements and in its discussions about carpet care and the issues associated with the use of hot versus cold water. (Professor Stephen Ashkin. President of The Ashkin Group, LLC.)

--My name is Paul Fitzpatrick. I work for a manufacturer of carpet cleaning machines. We heard from a customer recently, who informed us he was told it is illegal to clean carpets in New York public schools with heated cleaning machines. I was hoping you could please answer a few of my questions? Is this true? If yes, what law states this ? What is the reason behind it?

(Paul Fitzpatrick [PFitzpatrick@mytee.com])(Rec'd 05/22/06 @ 3:54pm)

--Section III (E) Use Cold Water. There is little or no scientific evidence supporting the effectiveness of cleaning with cold water. Scientific research is available to support that cleaning with warm to hot water is more effective, and actually saves energy and labor. Reference: Michael Berry, Dr.PH; Eugene Cole, Dr.PH. <http://www.newton.dep.anl.gov/askasci/gen01/gen01759.htm>

(Carey Vermeulen, President, Institute of Inspection, Cleaning, and Restoration Certification, (IICRC) Institute Of Inspection, Cleaning And Restoration Certification, Vancouver, WA)

--Cold water cleaning. In this regard while there are cleaning products designed to work in cold water there is also a desire to reduce the use of cleaning chemicals wherever possible. Using micro fiber cleaning cloths in conjunction with warm water increases the cleaning efficiency without the need to add chemicals for cleaning. Surfaces can in fact be disinfected without the use of chemical disinfectants by use of portable steam machines.

I recommend the revision to state use cleaning processes that utilize warm or hot water without the addition of cleaning chemicals where possible and the use of cold water when cleaning with detergents. (Michael Rochon, Cogent Environmental Solutions, Caledon, ON, L0N 1C0)